Cigarette Smoking Among Men in Ghana: Socioeconomic Predictors and Psychological Effects

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Abstract

Background: *Cigarette smoking is implicated with many adverse health and financial implications, a leading cause of morbidity and mortality worldwide, even though it still remains one of the foremost reasons for many morbidities and mortalities which are preventable.*

Aim: *To identify cigarette smoking prevalence among men in Ghana, socioeconomic predictors, and the psychological effect of smoking.*

Methods: *Descriptive cross-sectional design was used relying on the Multiple Indicator Cluster Survey (MICS) of Ghana for 2017/18. Chi-square and logistics regression analysis was used for variable association and prediction.*

Results: *The prevalence of ever cigarette smoking among Ghanaian men of 5322 study participants was 12.7%. Predictors' factors included: increased age above 24 years, lower educational attainment, single/co-habitation relationship, region (Greater Accra), ethnicity (Grusi, Mole Dagbani and other tribes), no health insurance and alcohol use. On psychological effects, a high proportion of those without cigarette smoking history were satisfied with life and happy.*

Conclusion: *Prevalence of cigarette smoking was high when compared to earlier similar studies in Ghana. Higher educational coverage is a necessary solution, since no or lower educational level predicts smoking.*

Keywords: *Cigarette, Smoking, socioeconomic, Psychological, Predictors.*

1. INTRODUCTION

Smoking is implicated with many adverse health and financial implications, even though it still remains one of the foremost reasons for many morbidities and mortalities which are preventable. It remains one of the leading causes of morbidity and mortality worldwide (1,2). In the 1990s, every day worldwide about one billion people smoked, of which about 47% were adult males and 12% were female adults (3). The harmful effect of smoking is on active smokers alone but also on passive smokers or secondhand smokers (4,5). Each year, about half a million people die from passive smoking (4).

Despite the adverse effect of cigarettes, their content nicotine increases the brain dopamine level, which in terms promotes the feeling of pleasure and well-being. However, more half the studies in a systematic review study by Fluharty et al. revealed a significant association between cigarette smoking and depression/anxiety(6).

They are still produced in large quantities across the world. Globally, each year close to 6.5 trillion (18 billion) of cigarettes are produced and sold (7). The prevalence of cigarette smoking varied across nations of the world (8,9,10,11). In USA, the overall prevalence of cigarette smoking was 15.5%, the prevalence specific to males was 17.5%, and that of females was 13.5%(8). Also, a study in Malaysia recorded a smoking prevalence of 22.8% among adult national population, the prevalence was higher among males than females, that of male adults was 43.0%, and that of females was 1.4%(9). In an earlier study in India, the prevalence was recorded as 11.8%(10). In Ghana, an earlier studies had it that the prevalence of smoking was 7.6% and that smoking was more predominant among males than females through Ghana Demographic and Health Survey data (11).

Studies have identified a significant relationships between smoking and demographic characteristics such as age, residence, ethnicity, and educational level. In Malaysian study, demographic factors associated with cigarette smoking included ethnicity, age (25-44 years), lower income level, and lower educational attainment(9).

Additionally, an earlier Ghana study using the 2014 Ghana Demographic and Health Survey data indicated a significant association between low socioeconomic and demographic factors and men with cigarette smoking, men in the lower age categories were less likely to smoke. Moreover, those in the higher income categories were less likely to smoke and years of education was negatively associated with cigarette smoking (12).

Understanding socioeconomic factors as predictors of smoking and psychological implications associated with smoking among Ghanaian is essential to enhance the identification of needed help for needed assistance. According to Rahman et al., identification of social factors associated with smoking will help establish the means of prevention (13). And smoking has been identified as a problem of the male sex (9,11,8). Hence, the aim of this current study was to know cigarette smoking among men in Ghana, their socioeconomic predictors, and psychological effects. The difference between this current study and an earlier similar study by Nketiah-Amponsah et al. is that their study employed the data of Ghana Demographic and Health Survey (GDHS) for 2014 with five years

3. STATISTICAL ANALYSIS

Statistical analysis was done using SPSS version 20 (IBM Corp., 2011, and NY). Results were presented using frequencies and percentages via tables and figures. The association between dependent and independent variables was done using chi-square and binary logistics regression model. Statistical significance was set at a p-value of < 0.05.

4. ETHICAL CONSIDERATION

The MICS team of UNICEF approved the protocol for the use of the Ghana Multiple Indicator Cluster Survey 2017/18 dataset for this study. Ethical approval was not compulsory for this study because it involved a secondary analysis of a dataset with no disclosure of the identity of the respondents.

5. RESULTS

reference date, meanwhile this current study employed more recent data from Ghana Multiple Indicator Cluster Survey (MICS) for 2017 with reference date of two years increasing the confidence interval compared to that of GDHS.

2. MATERIALS AND METHODS

A descriptive cross-sectional survey design was employed using data from the Multiple Indicator Cluster Survey (MICS) of Ghana for 2017/18. The survey was conducted between October 2017 to January 2018 by Ghana Statistical Service in partnership with Ministry of Health, Ministry of Education, Ministry of Sanitation and Water Resources, Ministry of Gender, Children and Social Protection, Ghana Health Service, and the Ghana Education Service. Technical support and financial support for the survey was from the United Nations Children's Fund (UNICEF), KOICA, UNDP, USAID, and the World Bank.

Ghana 2010 Population and Housing Census (PHC) was the sampling frame used. This included all men (5476) aged 15-49 years who were permanent occupants of selected households or visitors who stayed in selected households the night before the survey.

Prevalence of Cigarette Smoking and Associated Factors

The prevalence of ever cigarette smoking among Ghanaian men of 5322 study participants was 12.7%. The highest prevalence was recorded in Volta region (18.7%) and the lowest in Central region (5.3%). Numerous factors were associated with cigarette smoking and included: Age of the participant $X^2(2, 5322) = 273.958$, P $\leq$ 0.001, educational level $X^2(4, 5322) = 104.258$, P $\leq$ 0.001, ethnicity $X^2(8, 5322) = 31.204$, P $\leq$ 0.001, Region $X^2(9, 5322) = 56.291$, P $\leq$ 0.001, functional difficulty $X^2(1, 5322) = 7.51$, P = 0.006, health insurance coverage $X^2(1, 5322) = 40.583$, P $\leq$ 0.001, wealth index quintile $X^2(4, 5322) = 13.391$, P $\leq$ 0.010 and alcohol use $X^2(9, 5322) = 260.368$, P $\leq$ 0.001 (Table 3).

Table1: *Socioeconomic characteristics of respondents'*

		Frequency	Percentage
Age group	15-24 years	2424	45.5%
	25-34 years	1285	24.1%
	35 years and above	1614	30.3%
Educational level	Pre-primary or none	696	13.1%
	Primary	767	14.4%
	JSS/JHS/Middle	2017	37.9%
	SSS/SHS/ Secondary	1325	24.9%
	Higher	518	9.7%

Residence	Urban	2396	43.8%
	Rural	3080	56.2%
Marital status	Married	1929	36.3%
	Co-habitation	492	9.2%
	Single	2899	54.5%
Region	Western	513	9.4%
	Central	436	8.0%
	Greater Accra	620	11.3%
	Volta	471	8.6%
	Eastern	540	9.9%
	Ashanti	701	12.8%
	Brong - Ahafo	488	8.9%
	Northern	634	11.6%
	Upper east	479	8.7%
	Upper west	594	10.8%
Ethnicity	Akan	1958	35.8%
	GA/Dangme	387	7.1%
	Ewe	663	12.1%
	Guan	189	3.5%
	Gruma	230	4.2%
	Mole Dagbani	1349	24.6%
	Grusi	240	4.4%
	Mande	17	0.3%
	Other	441	8.1%
Functional difficulties (age 18-49 years)	Has functional difficulty	231	5.4%
	Has no functional difficulty	4078	94.6%
Have health insurance	With insurance	2287	43.0%
	Without insurance	3036	57.0%
Wealth index quintile	Poorest	1416	26.6%
	Second	878	16.5%
	Middle	931	17.5%
	Fourth	1006	18.9%
	Richest	1092	20.5%
Alcohol use	Yes	2593	48.7%
	No	2729	51.3%

Table2: *Psychology of Ghanaian men*

		Frequency	Percentage
Estimation of overall happiness	Very happy	2236	42.0%
	Somewhat happy	2010	37.8%
	Neither happy nor unhappy	726	13.6%
	Somewhat unhappy	222	4.2%
	Very unhappy	129	2.4%
Life satisfaction compared to last year	Improved	3501	65.8%
	More or less than same	1016	19.1%
	Worsen	802	15.1%
Life satisfaction expectation for next year	Improved	5160	97.2%
	More or less than same	124	2.3%
	Worsen	24	0.5%

Table3: *Association between Socioeconomic Characteristics and Cigarette Smoking*

		ever smoke cigarette		X^2	df	P-value
		No	Yes			
Age group	15-24 years	2307	117	273.958	2	≤ .001
	25-34 years	1084	201			
	35 years and above	1257	356			
Educational level	Pre-primary or none	534	161	104.258	4	≤ .001
	Primary	641	126			
	JSS/JHS/Middle	1824	193			
	SSS/SHS/ Secondary	1187	138			

	Higher	462	56			
Residence	Urban	2036	300	.119	1	.730
	Rural	2612	374			
Marital status	Married	1569	359	153.245	2	≤ .001
	Co-habitation	395	97			
	Single	2681	218			
Region	Western	453	56	56.291	9	≤ .001
	Central	410	23			
	Greater Accra	496	105			
	Volta	370	85			
	Eastern	453	47			
	Ashanti	595	89			
	Brong - Ahafo	408	64			
	Northern	539	81			
	Upper east	410	59			
	Upper west	514	65			
Ethnicity	Akan	1717	195	31.204	8	≤ .001
	GA/Dangme	331	41			
	Ewe	537	103			
	Guan	155	28			
	Gruma	196	31			
	Mole Dagbani	1154	164			
	Grusi	186	43			
	Mande	13	4			
	Other	359	63			
Functional difficulties (age 18-49 years)	Yes	181	50	7.51	1	.006
	No	3468	609			
Have health insurance	With insurance	2073	213	40.583	1	≤ .001
	Without insurance	2575	461			
Wealth index quintile	Poorest	1200	216	13.391	4	.010
	Second	777	101			
	Middle	819	112			
	Fourth	898	108			
	Richest	954	137			
Alcohol use	Yes	2068	524	260.368	1	≤ .001
	No	2579	150			

Predictors of Cigarette Smoking

Variables with significance at chi-square analysis were further modeled with binary logistics regression to identify predictors of cigarette smoking among men in Ghana. Age was a predictor of use, men with age within 25-34 years were more likely 2.1 times to smoke cigarette as compared those in the age group of 15 – 24 years (AOR = 2.1, 95%, C.I. = 1.57 – 2.81), equally those within the age group of 35 years and above are more likely about three times to smoke cigarette as compared those in the age group of 15 – 24 years (AOR = 3.17, 95%, C.I. = 2.32 – 4.33).

Lower educational attainment predicted cigarette smoking, those with JSS/JHS/Middle and SSS/SHS/Secondary level of education were less likely 0.6 times to involve cigarette smoking as compared with those without education (AOR = 0.59, 95%, C.I. = 0.44 – 0.79), (AOR = 0.59, 95%, C.I. = 0.42 – 0.82) respectively. Furthermore, those with higher educational level were less likely about 0.5 times to involve with cigarette smoking when compared with those without education (AOR = 0.47, 95% C.I. = 0.31 – 0.71).

Additionally, marital status predicted cigarette smoking, those in co-habitation relation were likely about 1.4 times to involve with cigarette smoking when compared those married (AOR = 1.39, 95%, C.I. = 1.04 – 1.87) and those who were single were likely about 1.3 times to involve with cigarette smoking when compared to those married (AOR = 1.32, 95%, C.I. = 1.02 – 1.72).

Again in terms regional prediction, those from Greater Accra region were 1.7 times likely to involve in cigarette smoking as compared to those from Western Region (AOR = 1.71, 95%, C.I. = 1.14 – 2.55). However, those from Central Region were protected from cigarette smoking, they were less likely about 50% to engage in cigarette smoking when compared to those from Western Region (AOR = 0.45, 95%, C.I. = 0.27 – 0.78).

Additionally, ethnicity predicted cigarette smoking, men from Grusi tribe were likely about 2.7 times to engage in cigarette smoking compared to men from Akan tribe (AOR = 2.65, 95%, C.I. = 1.67 – 4.20). Furthermore, those belonging to Mole Dagbani tribe were likely about 1.8 times to engage in smoking compared to those from Akan tribe (AOR = 1.75, 95% C.I. = 1.24 – 2.47) and those from other Ghanaian tribes apart from those listed in this current study were likely about 1.8 times to engage in cigarette smoking compared to those from Akan tribe (AOR = 1.82, 95%, C.I. = 1.25 – 2.65).

Furthermore, those without health insurance were likely about 1.5 times to engage in cigarette smoking compared to those with health insurance (AOR = 1.48, 95% C.I. = 1.21 – 1.80).

Finally, alcohol use predicted cigarette smoking, those involve in alcohol use were also likely about 3.6 times to involve in cigarette smoking as compared to those not using alcohol (AOR = 3..60, 95%, C.I. = 2.88 – 4.52) (Table 4).

Table4: *Binary Logistic Regression for Predictors of Cigarette Smoking*

	B	S.E.	Wald	Sig.	AOR	95% C.I. for AOR	
						Lower	Upper
15-24 years			**Ref**	.000			
25-34 years	.741	.148	25.098	**.000**	**2.099**	**1.570**	**2.805**
35 years and above	1.152	.160	52.119	**.000**	**3.165**	**2.315**	**4.328**
Pre-primary or none			**Ref**	.000			
Primary	.046	.154	.091	.763	1.047	.774	1.417
JSS/JHS/Middle	-.533	.153	12.046	**.001**	**.587**	**.435**	**.793**
SSS/SHS/ Secondary	-.526	.170	9.529	**.002**	**.591**	**.423**	**.825**
Higher	-.765	.215	12.695	**.000**	**.466**	**.306**	**.709**
Married			**Ref**	.033			
Co-habitation	.332	.149	4.982	**.026**	**1.394**	**1.041**	**1.866**
Single	.280	.133	4.448	**.035**	**1.323**	**1.020**	**1.716**
Western			**Ref**	.000			
Central	-.789	.273	8.359	**.004**	**.454**	**.266**	**.776**
Greater Accra	.534	.206	6.736	**.009**	**1.705**	**1.140**	**2.552**
Volta	.323	.250	1.664	.197	1.381	.846	2.255
Eastern	-.279	.234	1.425	.233	.757	.479	1.196
Ashanti	.288	.198	2.115	.146	1.334	.905	1.965
Brong - Ahafo	.155	.218	.502	.479	1.167	.761	1.791
Northern	.410	.239	2.941	.086	1.506	.943	2.406
Upper east	-.287	.254	1.271	.260	.751	.456	1.236
Upper west	-.430	.249	2.989	.084	.651	.400	1.059
Akan			**Ref**	.000			
GA/Dangme	-.232	.207	1.253	.263	.793	.528	1.190
Ewe	.055	.186	.087	.768	1.057	.734	1.522
Guan	.329	.273	1.445	.229	1.389	.813	2.374
Gruma	.175	.267	.429	.512	1.191	.706	2.008
Mole Dagbani	.560	.176	10.123	**.001**	**1.751**	**1.240**	**2.472**
Grusi	.974	.236	17.059	**.000**	**2.647**	**1.668**	**4.202**
Mande	1.165	.629	3.434	.064	3.206	.935	10.991
Other	.597	.192	9.728	**.002**	**1.817**	**1.249**	**2.645**
Functional difficulties (No/Yes)	-.211	.183	1.330	.249	.810	.566	1.159
Health insurance(No/Yes)	.391	.101	15.061	**.000**	**1.479**	**1.214**	**1.802**
Poorest			**Ref**	.478			
Second	-.162	.149	1.179	.278	.851	.635	1.139
Middle	-.001	.157	.000	.996	.999	.735	1.358
Fourth	-.166	.167	.988	.320	.847	.611	1.175
Richest	.052	.182	.081	.775	1.053	.737	1.505
Alcohol use (Yes/No)	1.283	.115	123.419	**.000**	**3.608**	**2.877**	**4.524**

Psychological Effects of Cigarette Smoking among Ghanaian Men

Chi-square analysis revealed a significant relationship between cigarette smoking and past year life satisfaction among Ghanaian men. In terms of proportion, a good percentage (67.7%) of men without cigarette smoking indicated improved life satisfaction for the previous year compared to 52.8% for those with a history of

cigarette smoking (X^2(2, 5318) = 91.352, P ≤ 0.001). And optimism with regard to life satisfaction for the coming year, 97.3% of those without cigarette smoking hoped for improved life satisfaction as compared to 96.4% for those with history of cigarette smoking (X^2(2, 5322) = 48.055, P ≤ 0.001) (Table 5).

Table5: *Chi-Square Analysis of Cigarette Smoking and Life Satisfaction (Experience and Expectation)*

		Life satisfaction compared to last year			Total
		Improved	More or less than same	Worsen	
ever smoke cigarette	No	3144	879	621	4644
		67.7%	18.9%	13.4%	100.0%
	Yes	356	137	181	674
		52.8%	20.3%	26.9%	100.0%
Total		3500	1016	802	5318
		65.8%	19.1%	15.1%	100.0%
X^2 (2, 5318) = 91.352, P ≤ 0.001					
		Life satisfaction expectation for next year			Total
		Improved	More or less than same	Worsen	
ever smoke cigarette	No	4514	104	20	4638
		97.3%	2.2%	0.4%	100.0%
	Yes	645	20	4	669
		96.4%	3.0%	0.6%	100.0%
Total		5159	124	24	5307
		97.2%	2.3%	0.5%	100.0%
X^2 (2, 5307) = 1.806, P = 0.405					

On the overall estimated life happiness of the respondents, the percentage of happiness among those without cigarette smoking was high (43.2%) compared to that (33.5%) of those with history of cigarette smoking (X^2(2, 5307) = 1.806, P = 0.405) (Figure 1).
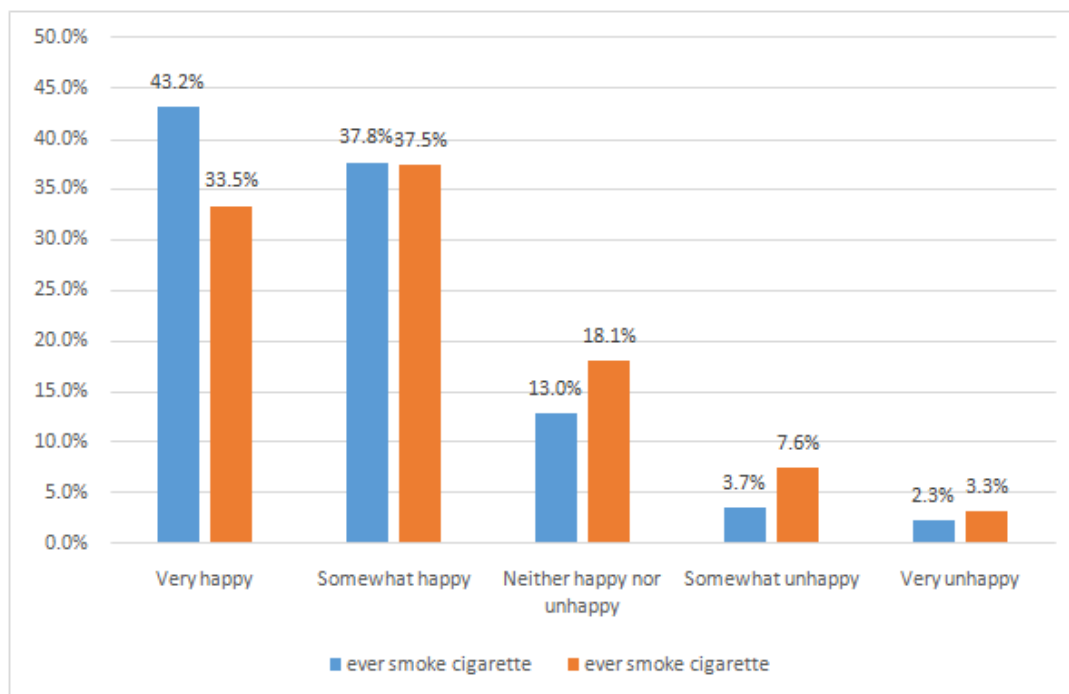

Figure1: *Estimation of Overall Happiness*

6. DISCUSSION

Prevalence of Cigarette Smoking and Predicted Factors

The prevalence of ever cigarette smoking use among Ghanaian men of 5322 study participants was 12.7%. This current study prevalence was high when compared to an earlier study done in Ghana, which recorded a prevalence of 7.6% in 2013 and 4.8% in 2014(11,12). However, as compared to other nations, this current study prevalence was low, the prevalence was 17.5% for USA and 43.0% for Malaysia (8,9). The highest prevalence was recorded in Volta region (18.7%) and the lowest in Central region (5.3%). This is different compared to an earlier study, in which the three northern regions have

the highest relative percentages of current daily smoking (11).

Numerous factors were associated with cigarette smoking and included: Age of the participant, educational level, ethnicity, region, functional difficulty, health insurance coverage and wealth index quintile, and alcohol use. In a similar recent study in Ghana, most of the respondents demographics were associated with cigarette smoking in the bivariate analysis (12).

Variables with significance in chi-square analysis were further modeled with binary logistics regression to identify predictors of cigarette smoking among men in Ghana. Age was a predictor of use, men with age within 25-34 years were more likely 2.1 times to smoke cigarette as compared those in the age group of 15 – 24 years, equally those within the age group of 35 years and above are more likely about three times to smoke cigarette as compared those in the age group of 15 – 24 years. Also in a Malaysian study age group of 25 – 44 years predicted cigarette smoking (9). This is an issue of concern as human health stock depreciates with increase age according to Grossman (14).

Lower educational attainment predicted cigarette smoking, those with JSS/JHS/Middle and SSS/SHS/Secondary level of education were less likely 0.6 times to involve cigarette smoking as compared with those without education. Moreover, those with higher educational level were less likely about 0.5 times to involve in cigarette smoking when compared with those without education. Moreover, in a Malaysian study, lower educational level predicted cigarette smoking (9). Per these studies, finding education has proven to be one key solution to solving the problem of smoking because higher education was a protection against cigarette smoking.

Moreover, marital status predicted cigarette smoking, those in co-habitation relation were likely about 1.4 times to involve with cigarette smoking when compared with those married and those who were single were likely about 1.3 times to involve with cigarette smoking when compared with those married. People who are married are likely to have their spousal support and more likely to avoid isolation or disconnection, which will help reduce the risk of detrimental health behaviours which includes cigarette smoking (15).

Again, in terms of regional prediction, those from Greater Accra region were 1.7 times likely to involve in cigarette smoking as compared to those from Western Region. However, those from Central Region were protected from cigarette smoking, they were less likely than about 50% to engage in cigarette smoking when compared to those from Western Regions. This finding is different when compared with a similar Ghana studies, where smokers who reside in the Upper East and Upper West regions reported to smoke more intensely than their counterparts in the Greater Accra region (12).

Additionally, ethnicity predicted cigarette smoking, men from Grusi tribe were likely about 2.7 times to engage in cigarette smoking compared to men from Akan tribe. Moreover, those belonging to Mole Dagbani tribe were likely about 1.8 times to engage in smoking compared to those from Akan tribe and those from other Ghanaian tribes apart from those listed in this current study were likely about 1.8 times to engage in cigarette smoking compared to those from Akan tribe. Every ethnic group has its unique cultural background, and cultural factors may have had a strong influence on the different patterns of smoking in Ghana.

Furthermore, those without health insurance were likely about 1.5 times to engage in cigarette smoking compared to those with health insurance. This was a similar report of an earlier study (11).

Finally, alcohol use predicted cigarette smoking, those involve in alcohol use were also likely about 3.6 times to involve in cigarette smoking as compared to those not using alcohol. This was a similar report of an earlier study (11).

Psychological Effects of Cigarette Smoking among Ghanaian Men

Chi-square analysis revealed a significant relationship between cigarette smoking and past year life satisfaction among Ghanaian men. In terms of proportion, a good percentage (67.7%) of men without cigarette smoking indicated improved life satisfaction for the previous year compared to 52.8% for those with a history of cigarette smoking. And on the overall estimated life happiness of the respondents, the percentage of happiness among those without cigarette smoking was high (43.2%) compared to that (33.5%) of those with a history of cigarette smoking. More than half of the studies in a systematic review study by Fluharty et al. confirmed this study finding that there is a significant association between cigarette smoking and depression/anxiety (6).

This study was with its limitations, not all variables like religion, which if they were studied would have thrown more light on the research question.

7. CONCLUSION

Prevalence of cigarette smoking was high when compared to earlier similar studies in Ghana and several socioeconomic factors such as age, region, ethnicity, health insurance status, and educational level predicted smoking. Identified psychological effects were life dissatisfaction and unhappiness.

8. DATA AVAILABILITY

All dataset related to the findings of this study is available online at www.dhsprogram.com.

REFERENCES

[1] Addo J, Smeeth L, Leon D. Smoking patterns in Ghanaian civil servants: changes over three decades. Int J Environ Res Public Health. 2009;: p. 200-8.

[2] Doku D, Koivusilta L, Raisamo S, Rimpelä A. Do socioeconomic differences in tobacco use exist also in developing countries? A study of Ghanaian adolescents. BMC Public Health. 2010; 10(1): p. 758.

[3] Foulds J, Delnevo C, Zeidonis D, Steinberg M. Health effects of tobacco, nicotine, and exposure to tobacco smoke pollution. In: Handbook of theMedical Consequences of Alcohol and Drug Abuse New York: The Haworth Press, Inc; 2008.

[4] World Health Organization. WHO report on the global tobacco epidemic 2009. Geneva:; 2009.

[5] World Bank. Curbing the epidemic governments and economics of tobacco. Washington (DC):; 1999.

[6] Fluharty M, Taylor AE, Grabski M, Munafò MR. The Association of Cigarette Smoking With Depression and Anxiety: A Systematic Review. Nicotine & Tobacco Research. 2017;: p. 3-13.

[7] Smith O. Mapped: The countries that smoke the most. The Telegraph. 2018.

[8] Jamal A, Phillips E, Gentzke AS, Homa DM, Babb SD, King BA, et al. Current Cigarette Smoking Among Adults — United States, 2016. Arlanta:; 2016.

[9] Kuang HL, Teh CH, Sayan P, Miaw YL, Muhammad FMY, M. S. Prevalence and factors associated with smoking among adults in Malaysia: Findings from the National Health and Morbidity Survey (NHMS) 2015. Tob. Induc. Dis. 2018;: p. 1-12.

[10] Thakur D, Gupta A, Mazta SR, Sharma D. Prevalence of cigarette smoking and its predictors among school going adolescents of North India. South Asian J Cancer. 2014; 3(4): p. 198-195.

[11] Yawson A, Baddoo A, Hagan-Seneadza N, Calys-Tagoe B, Hewlett S, Dako-Gyeke P, et al. Tobacco use in older adults in Ghana: sociodemographic characteristics, health risks and subjective wellbeing. BMC Public Health. 2013; 13.

[12] Nketiah-Amponsah E, Afful-Mensah G, Ampaw S. Determinants of cigarette smoking and smoking intensity among adult males in Ghana. BMC Public Health. 2018; 2018: p. 1-10.

[13] Rahman M, Arif MT, Razak FA, Suhaili MR, Tambi Z, Akoi C, et al. Factors associated with tobacco use among the adult population in sarawak, Malaysia: a cross sectional study. Epidemiology Biostatics and Public Health. 2015;: p. 1-9.

[14] Grossman M. On the concept of health capital and the demand for health. J Polit Econ. 1972; 80(2): p. 223–55.

[15] Cornwell E, Waite L. Social disconnectedness, perceived isolation, and health among older adults. J Health Soc Behav. 2009; 50(1): p. 31-48.

[16] Doku D, Raisamo S, Wiium N. The role of tobacco promoting and restraining factors in smoking intentions among Ghanaian youth. BMC Public Health. 2012; 12(1): p. 662.